

**WHAT IS CLAIMED IS:**

1. A print system that is capable of sending a status of a printer to a management server, which manages the status of said printer, via a telecommunication line, said print

5 system comprising:

a counting module that counts up printing operations of said printer to give a count representing a number of printing operations;

10 a count judgment module that determines whether the count given by said counting module reaches a preset value;

a printing operation restriction module that restricts printing operations of said printer when said count judgment module determines that the count reaches the preset value;

15 a connection detection module that detects establishment of connection with said management server; and

a count setting module that resets the count to a specified value prior to the preset value, in response to detection of establishment of connection with said management server by said connection detection module.

20 2. A print system in accordance with claim 1, said print system further comprising:

an error output module that outputs a print error, when said count judgment module determines that the count reaches

the preset value.

3. A print system in accordance with claim 1, wherein  
said count setting module resets the count to zero, in response  
to detection of establishment of connection with said  
5 management server by said connection detection module.

4. A print system in accordance with claim 1, said print  
system further comprising:

an auto connection trial module that tries to establish  
connection with said management server via the  
10 telecommunication line at every predetermined time interval  
after the start of said print system.

5. A print system in accordance with claim 4, wherein  
said count judgment module determines whether the count reaches  
the preset value, which is specified based on a maximum number  
15 of sheets printable with said printer in the predetermined time  
interval.

6. A print system in accordance with claim 4, wherein  
said count judgment module determines whether the count reaches  
the preset value, which is specified based on a maximum number  
20 of sheets printable in response to a user's requirements in  
the predetermined time interval.

7. A print system in accordance with claim 4, said print  
system further comprising:

a predetermined time interval variation module that varies the predetermined time interval according to a frequency of printing with said printer in response to a user's requirements.

5        8. A print system in accordance with claim 1, wherein said connection detection module detects establishment of connection with said management server in the case of successful transmission of the status of said printer to said management server via the telecommunication line.

10      9. A print system in accordance with claim 1, said print system further comprising:

      a manual connection trial module that tries to establish connection with said management server via the telecommunication line, in response to a user's command output  
15    at an arbitrary timing.

      10. A print system comprising: a printer that carries out printing on a printing medium; and a print server that is capable of sending a status of said printer to a management server, which manages the status of said printer, via a  
20    telecommunication line,

      said printer comprising:

      a counting module that counts up printing operations to give a count representing a number of printing operations;

a count judgment module that determines whether the count given by said counting module reaches a preset value; and

a printing operation restriction module that restricts printing operations when said count judgment module determines

5 that the count reaches the preset value,

said print server comprising:

a connection detection module that detects establishment of connection with said management server; and

10 a command output module that outputs a command to said printer to reset the count given by said counting module to a specified value prior to the preset value, in response to detection of establishment of connection with said management server by said connection detection module.

11. A print system in accordance with claim 1, said print system comprising:

a printing instruction output module that outputs printing instructions in time series to said printer;

an operation number input module that inputs a number of printing operations counted up by said counting module; and

20 a verification module that compares a total number of printed sheets with regard to printing instructions output in a predetermined time interval to said printer by said printing instruction output module with a total number of printing

operations input in the predetermined time interval by said operation number input module, and verifies a working status of said printer based on a result of the comparison.

12. A print system in accordance with claim 11, wherein  
5 said verification module determines whether either of a difference between the total number of printing operations input in the predetermined time interval by said operation number input module and the total number of printed sheets with regard to the printing instructions output in the predetermined  
10 time interval to said printer by said printing instruction output module and a ratio of the total number of printing operations to the total number of printed sheets is within a preset allowable range, so as to determine whether the working status of said printer is appropriate or inappropriate.

15 13. A print system in accordance with claim 1, said print system further comprising:

a printing instruction output module that outputs printing instructions in time series to said printer;  
a cumulative value input module that receives a  
20 cumulative count representing a number of printing operations at a start of execution of each printing instruction by said printer and a cumulative count representing a number of printing operations at an end of execution of the printing

instruction by said printer, from said counting module; and  
a verification module that compares a cumulative count  
at an end of execution of a previous printing instruction  
received by said cumulative value input module with a  
5 cumulative count at a start of execution of a current printing  
instruction received by said cumulative value input module,  
among the printing instructions output in time series, and  
verifies a working status of said printer based on a result  
of the comparison.

10        14. A print system in accordance with claim 13, wherein  
said verification module determines whether either of a  
difference between the cumulative count at the start of  
execution of the current printing instruction and the  
cumulative count at the end of execution of the previous  
15 printing instruction among the printing instructions output  
in time series and a ratio of the cumulative count at the start  
of execution of the current printing instruction to the  
cumulative count at the end of execution of the previous  
printing instruction is within a preset allowable range, so  
as to determine whether the working status of said printer is  
20 appropriate or inappropriate.

15. A print system in accordance with claim 1, said print  
system further comprising:

a printing instruction output module that outputs printing instructions in time series to said printer;

a count input module that inputs a count representing a number of printing operations counted up in response to each

5 of the printing instructions, from said counting module; and

a verification module that compares a number of printed sheets with regard to each printing instruction with a count corresponding to the printing instruction, and verifies a working status of said printer based on a result of the

10 comparison.

16. A print system in accordance with claim 15, wherein said verification module determines whether either of a difference between the count corresponding to each printing instruction and the number of printed sheets with regard to the printing instruction and a ratio of the count corresponding to each printing instruction to the number of printed sheets with regard to the printing instruction is within a preset allowable range, so as to determine whether the working status of said printer is appropriate or inappropriate.

20 17. A print system in accordance with claim 11, said print system comprising said management server that manages the status of said printer, and a print server that sends the status of said printer to said management server via the

telecommunication line,

where said management server comprising at least said verification module and said print server comprising at least said printing instruction output module.

5       18. A print system in accordance with claim 13, said print system comprising said management server that manages the status of said printer, and a print server that sends the status of said printer to said management server via the telecommunication line,

10      where said management server comprising at least said verification module and said print server comprising at least said printing instruction output module.

15      19. A print system in accordance with claim 15, said print system comprising said management server that manages the status of said printer, and a print server that sends the status of said printer to said management server via the telecommunication line,

20      where said management server comprising at least said verification module and said print server comprising at least said printing instruction output module.

20. A print system in accordance with claim 1, said print system further comprising:

a printing instruction output module that exclusively

outputs printing instructions in time series to said printer;  
an operation number input module that inputs a number  
of printing operations counted up by said counting module; and  
an assumption module that compares a total number of  
5 printed sheets with regard to printing instructions output in  
a predetermined time interval to said printer by said printing  
instruction output module with a total number of printing  
operations input in the predetermined time interval by said  
operation number input module, compares a number of printed  
10 sheets with regard to each of the printing instructions output  
to said printer by said printing instruction output module with  
a number of printing operations counted up in response to the  
each printing instruction and input by said operation number  
input module, and assumes a working status of said printer based  
15 on results of the comparisons.

21. A print system in accordance with claim 20, wherein  
said assumption module assumes that said printer carries out  
printing in response to a foreign printing instruction received  
from a foreign device other than said printing instruction  
20 output module, when the result of the comparison between the  
total number of printing operations input in the predetermined  
time interval and the total number of printed sheets with regard  
to the printing instructions output in the predetermined time

interval to said printer is out of a preset allowable range but the result of the comparison between the number of printing operations counted up in response to each printing instruction and the number of printed sheets with regard to the each 5 printing instruction is within a predetermined allowable range.

22. A print system in accordance with claim 20, wherein said assumption module assumes that said printer has some abnormality, when the result of the comparison between the 10 total number of printing operations input in the predetermined time interval and the total number of printed sheets with regard to the printing instructions output in the predetermined time interval to said printer is out of a preset allowable range and the result of the comparison between the number of printing 15 operations counted up in response to each printing instruction and the number of printed sheets with regard to the each printing instruction is out of a predetermined allowable range.

23. A print system in accordance with claim 1, said print system further comprising:

20 a printing instruction output module that exclusively outputs printing instructions in time series to said printer; a cumulative value input module that receives a cumulative count representing a number of printing operations

at a start of execution of each printing instruction by said printer and a cumulative count representing a number of printing operations at an end of execution of the printing instruction by said printer, from said counting module;

5        a printing operation number computation module that computes a number of printing operations corresponding to each printing instruction from the two cumulative counts received by said cumulative value input module; and

            an assumption module that compares a cumulative count

10      at an end of execution of a previous printing instruction received by said cumulative value input module with a cumulative count at a start of execution of a current printing instruction received by said cumulative value input module, among the printing instructions output in time series by said 15      printing instruction output module, compares a number of printed sheets with regard to each of the printing instructions output to said printer by said printing instruction output module and a number of printing operations corresponding to the each printing instruction computed by said printing 20      operation number computation module, and assumes a working status of said printer based on results of the comparisons.

24. A print system in accordance with claim 23, wherein said assumption module assumes that said printer carries out

printing in response to a foreign printing instruction received from a foreign device other than said printing instruction output module, when a difference between the cumulative count at the start of execution of the current printing instruction 5 and the cumulative count at the end of execution of the previous printing instruction, among the printing instructions output in time series, is out of a preset allowable range but the result of the comparison between the computed number of printing operations corresponding to each printing instruction and the 10 number of printed sheets with regard to the each printing instruction is within a predetermined allowable range.

25. A print system in accordance with claim 23, wherein said assumption module assumes that said printer has some abnormality, when a difference between the cumulative count 15 at the start of execution of the current printing instruction and the cumulative count at the end of execution of the previous printing instruction, among the printing instructions output in time series, is out of a preset allowable range and the result of the comparison between the number of printing operations 20 corresponding to each printing instruction and the computed number of printed sheets with regard to the each printing instruction is out of a predetermined allowable range.

26. A print system in accordance with claim 20, said print

system comprising said management server that manages the status of said printer, and a print server that sends the status of said printer to said management server via the telecommunication line,

5           where said management server comprising at least said assumption module and said print server comprising at least said printing instruction output module.

27. A print system in accordance with claim 23, said print system comprising said management server that manages the status of said printer, and a print server that sends the status of said printer to said management server via the telecommunication line,

10           where said management server comprising at least said assumption module and said print server comprising at least said printing instruction output module.

15           28. A print system control method of activating one or multiple computers to control a print system that is capable of sending a status of a printer to a management server, which manages the status of said printer, via a telecommunication line, said print system control method comprising the steps of:

20           counting up printing operations of said printer to give a count representing a number of printing operations;

judging whether the count given in said count-up step reaches a preset value;

restricting printing operations of said printer when said judgment step determines that the count reaches the preset  
5 value;

detecting establishment of connection with said management server; and

resetting the count to a specified value prior to the preset value, in response to detection of establishment of  
10 connection with said management server in said detection step.

29. A print system control method in accordance with claim 28, said print system control method further comprising the steps of:

outputting printing instructions in time series to said  
15 printer; and

comparing a total number of printed sheets with regard to printing instructions output in a predetermined time interval to said printer in said printing-instruction-output step with a total number of printing operations given in said  
20 count-up step in the predetermined time interval, and verifying a working status of said printer based on a result of the comparison.

30. A print system control method in accordance with

claim 28, said print system control method further comprising  
the steps of:

outputting printing instructions in time series to said  
printer;

5 receiving a cumulative count representing a number of  
printing operations at a start of execution of each printing  
instruction by said printer and a cumulative count representing  
a number of printing operations at an end of execution of the  
printing instruction by said printer; and

10 comparing a cumulative count at an end of execution of  
a previous printing instruction with a cumulative count at a  
start of execution of a current printing instruction, among  
the printing instructions output in time series, and verifying  
a working status of said printer based on a result of the  
15 comparison.

31. A print system control method in accordance with  
claim 28, said print system control method further comprising  
the steps of:

outputting printing instructions in time series to said  
20 printer;

inputting a count representing a number of printing  
operations given in said count-up step, in response to each  
of the printing instructions; and

comparing a number of printed sheets with regard to each printing instruction with a count corresponding to the printing instruction, and verifying a working status of said printer based on a result of the comparison.

5       32. A print system control method in accordance with claim 28, said print system control method further comprising the steps of:

          outputting printing instructions in time series to said printer; and

10      comparing a total number of printed sheets with regard to printing instructions output in a predetermined time interval to said printer in said printing-instruction-output step with a total number of printing operations given in said count-up step in the predetermined time interval, comparing  
15     a number of printed sheets with regard to each of the printing instructions output to said printer in said printing-instruction-output step with a number of printing operations counted up in response to the each printing instruction and input in said count-up step, and assuming a  
20     working status of said printer based on results of the comparisons.

33. A print system control method in accordance with claim 28, said print system control method further comprising

the steps of:

    outputting printing instructions in time series to said printer;

    receiving a cumulative count representing a number of  
5    printing operations at a start of execution of each printing instruction by said printer and a cumulative count representing a number of printing operations at an end of execution of the printing instruction by said printer;

    computing a number of printing operations corresponding  
10   to each printing instruction from the two cumulative counts received in said cumulative-count-input step; and

    comparing a cumulative count at an end of execution of a previous printing instruction received in said cumulative-count-input step with a cumulative count at a start  
15   of execution of a current printing instruction received in said cumulative-count-input step, among the printing instructions output in time series in said printing-instruction-output step, comparing a number of printed sheets with regard to each of the printing instructions output to said printer in said  
20   printing-instruction-output step and a number of printing operations corresponding to the each printing instruction computed in said computation step, and verifying a working status of said printer based on results of the comparisons.